THE AUSTRALIAN PLANT DISEASE RECORDER.

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Editor: K.E. Hutton, Biological Branch,
Department of Agriculture,
Box 36, G.P.O., SYDNEY.

I N D E X

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PLANT DISEASE NOTES.

CEREALS AND GRASSES.

A LEAF SPOT OF SNOWDENIA POLYSTACHIA FROM NEW GUINEA:

Diseased specimens of a grass labelled *Snowdenia polystachia* were recently received from New Guinea. Lesions on the leaves measure approximately 5 mm. x 3 mm, with a dull pale grey to straw-coloured water-soaked centre, and a rather definite dark brown edge.

In a humid atmosphere, *Piricularia* spores were produced. Colonies from surface-sterilised diseased tissue were white, and later grey in colour, typical of colonies of *Piricularia grisea*. The colonies were non-sporing on P.D.A., but when pieces of agar with mycelium were floated on water, typical *Piricularia* spores were produced. This appears to be the first record of *Piricularia* on *Snowdenia*, and it has not been recorded on the related genus *Bekera*.

Most workers recognise the rice-infecting *Piricularia* as *P. oryzae* Cav., and as being physiologically distinct from, although morphologically similar to, the grass-infecting *Piricularia*, usually recorded as *P. grisea* (Cke.) Sacc.

That *P. grisea* is itself composed of strains capable of infecting some of the usually-recorded hosts and not others, is evident from the various reports of McRae, of Nisikado, and of Thomas. Nisikado distinguished *P. setariae* as infecting *Setaria italica* and *S. viridis*, and *P. grisea* infecting *Digitaria sanguinalis*.

As far as the writer can trace, 24 specified and several unspecified species of 16 genera of the *Gramineae* have been recorded in the literature as hosts of *Piricularia*. Inoculation tests on to locally-occurring hosts of *Piricularia* are in progress, but it is obvious that for the strain complex to be determined fully, cross-inoculation tests with isolates from the various hosts would need to be carried out.

In the absence of this evidence, the isolate is referred to *P. grisea* (Cke.) Sacc.

Faculty of Agriculture,
University of Sydney.

- DOROTHY E. SHAW.

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VEGETABLES:

POWDERY MILDEW OF POTATOES:

During a recent survey of potato crops in the Guyra district of New South Wales, Powdery Mildew (*Oidium* sp.) was observed on crops of Monak and Sequoia. The foliage had been mildewed, and moderate to severe stem spotting was present, many of the stem spots having coalesced to produce fairly extensive superficial lesions.

Specimens of Sequoia plants recently received from the Crookwell district were similarly affected.

In these tableland potato districts the season was very dry until mid-February when falls of from 4 to 6 inches of rain were received.

Powdery mildew was first recorded on potatoes in this State in 1933. Subsequently, it has seldom been observed, and has never been of economic importance.

Department of Agriculture,
Sydney.

- R. J. CONROY.

CARROT MOTLEY DWARF:

Carrots forwarded from Brisbane to Burnley Gardens in September, 1951 were found to be infected with the carrot motley dwarf virus. Symptom expression for the carrot virus in the Brisbane area is, on the whole, much milder than the Victorian pattern. All symptoms described by L. L. Stubbs (Aust. J. Sci-Res. series B, vol. 1, no. 3, pp.303-332, 1948) are present in Queensland carrots infected with the virus, but it is rare to see stunting to the same degree as witnessed in Victoria. Carrots bearing symptoms resembling this disease were first observed in Queensland in 1947.

Department of Agriculture and Stock,
Brisbane.

- O. W. STURGESS.

TREATMENT OF PEA AND BEAN SEED:

Solutions of (a) tetroc (tetra-chloro-para-benzo-quinone) and (b) sulphanilamide were tested in the control of bacterial and fungal contaminants of pea and bean seed.

Treatment of seed for 48 hours with a saturated solution of tetroc in either acetone or sulphuric ether appears to give fairly good control of bacterial diseases carried in pea and bean seed.

Treatment of bean seed for 48 hours with a 20 per cent solution of sulphanilamide in acetone appears to effectively sterilize contaminated bean seed killing both fungi and bacteria in tests where the seed was germinated on agar, but also resulting in poor soil germination of the seed. Sulphanilamide treatment gave no control of bacterial blight carried in pea seed.

C.S.I.R.O.,
Canberra.

- D. C. WARK.

INCIDENCE OF SPOTTED WILT IN TOMATOES:

After three years of abnormally low incidence in New South Wales, spotted wilt of tomato was more common this season. There was a low incidence in early crops and in November, when peak losses are usually expected, it appeared that a fourth year of comparative freedom from the disease would be experienced. However, reports of its occurrence became more numerous as the season advanced, reaching a peak during January and February. In one crop of 800 plants at Narara 200 plants developed tip blight symptoms during February.

Thus, this season spotted wilt again became of some economic importance and peak incidence changed from November-December to January-February.

Department of Agriculture,
Sydney.

- W. S. SUTTON.

FRUIT.

INDICATORS FOR PSOROSIS VIRUS OF CITRUS:

Seedlings of the following citrus varieties have been inoculated by budding with Psorosis A in several series of preliminary experiments.

Mandarin	- Ellendale, Cleopatra, Emperor.
Sweet Orange	- Tahiti seedling, Parramatta, Homosassa.
Citron	- Knight, Bengal, Pear-shaped.
Lime	- East Indian, West Indian, New Guinea.
Lemon types	- Eureka, Jamburi, Itikinuma.
Seville	- Bittersweet.
Grapefruit	- Triumph.
Miscellaneous	- *Poncirus trifoliata*, Yuzu, Karna, *Citrus suboiensis*, Calamondin.

Psorosis leaf patterns were developed on new growth by most of these types 6-10 weeks after inoculation. In most cases they were transient, lasting only a few weeks. Symptoms shown by Calamondin, Karna, East Indian lime and *Citrus suboiensis* were very slight, involving faint clearing of tissues near minor veins in one or two leaves.

In the Ellendale mandarin, West Indian lime and Triumph grapefruit no definite psorosis symptoms were seen, possibly because of the early development of reactions to tristeza and/or yellows virus which were also present in the inoculum used. In the lemons, citrons, seville, New Guinea lime and Yuzu the development of other virus reactions followed closely on that of psorosis, and obscured the pattern entirely. In trifoliata, stunting and some interveinal clearing of tissues was caused by psorosis. The Emperor and Cleopatra seedlings developed leaf patterns as satisfactory as those produced by sweet orange seedlings, and unmasked by any other virus manifestation. It is thought that the Cleopatra mandarin in particular is worthy of further trial as a psorosis indicator.

Department of Agriculture,
Sydney.

- LILIAN R. FRASER.

XYLOPOROSIS POSSIBLY PRESENT IN NEW SOUTH WALES:

Three Washington Navel orange trees in an orchard at Colo were recently found to be showing symptoms agreeing in every respect with the description of the xyloporosis disease of citrus as it occurs in Palestine, (Reichert and Perlberger, Hadar VII (7/8). The trees were twelve years old, well grown and said to be on rough lemon stock. One tree had been affected for 5 years and was in the last stages of decline and two had shown early symptoms 12 months ago. On these, leaf fall had been severe and the remaining mature leaves showed the

yellowing along the mid vein which is a characteristic of an interruption to the phloem. Some new growth had been made, the leaves of which were abnormally thick.

Externally the root system appeared to be in good order. On lifting the bark of the butt the surface of the wood of the stock was found to be closely pitted with rather small conical pits, and the under surface of the bark had corresponding pegs or projections. Some accumulation of gum was noted in the phloem.

The xyloporosis disease in Palestine affects only sweet lime stocks (rough lemon is not grown there). Recently Childs in Florida (Citrus Industry 33: 1: 5, 8-9, 11) has demonstrated that the disease is caused by a virus, carried symptomlessly in orange and grapefruit varieties, and producing recognisable symptoms in some tangelos, mandarins and kumquat hybrids. He has not found rough lemon to be affected.

It would seem reasonably certain that oranges and grapefruit are widely infected in Palestine, the disease being latent in the commonly used stock-scion combinations. It would be easy for such a disease to be introduced to Australia in budwood, and to remain unsuspected until a susceptible stock-scion combination was used.

The history of the affected trees found at Colo is being investigated and local strains of rough lemon, sweet lime and tangelo tested for their reaction to the disorder.

Department of Agriculture,
Sydney.

- LILIAN R. FRASER.

A DISEASE OF SEEDLING CITRUS:

During the past two years a disease has affected citrus seedlings of many varieties, raised under glasshouse conditions for work in connection with virus diseases. It causes leaf-spotting, defoliation, shoot blight and collar rot.

The leaf lesions commence as small dark rather irregular spots which develop a yellowish halo. Some of these develop into rapidly spreading paler brown lesions on which rings of spores are produced. Spore production continues on fallen decaying leaves or rotted stems. All citrus species and hybrids so far tested appear to be susceptible, the calamondin, seville, citron and kumquat varieties especially so. Mandarins are fairly resistant.

The fungus was submitted to the C.M.I. for identification. Mr. Mason, who examined it, considers it to be a Corynespora, but he has not so far been able to match it with anything described on citrus.

The disease has not been found in the field and was unknown on glasshouse seedlings until 1950.

Department of Agriculture,
Sydney.

- LILIAN R. FRASER.

SEPTORIA SPOT OF CITRUS:

Although the incidence of Septoria depressa throughout the Murrumbidgee Irrigation Area was light during the 1951 season it was possible to gather some additional data about this disease and its control.

Reference to Dr. Fraser's report (A.P.D.R. 2:1:6, 1950) will indicate the etiology of this disease. It is now considered that in the M.I.A. a period of prolonged showery humid weather is necessary for the fungus to cause infection of the rind of the immature citrus fruit. The fungus remains latent for a period, the limits of which are not exactly known. Then there occurs some activating factor which causes the typical lesions to develop.

In 1949, infection took place as early as the second week of March, and in 1950 it occurred at the end of March. In both cases these were periods of continuous showery weather. By way of contrast the autumn of 1951 was extremely dry and infection did not occur until late May or early June.

In 1949 septoria spot did not develop until about two weeks after a period of very heavy frosts (July 8th to 13th) in 1949. The following season Septoria appeared at the end of May when no frosts of any consequence had been recorded. However, the appearance of the Septoria lesions on the navel oranges was associated with an unusually severe occurrence of oleocellosis. In 1951 the first symptoms were not seen until the end of July about three weeks after a period of severe frosts.

The following table indicates the data as known at present regarding septoria infection on the M.I.A:-

	1949	1950	1951
Infection period	7th to 12th March	29th March to 4th April	(a) 24th to 27th May (b) 11th to 14th June.
Weather during this period	225 points of rain in 6 days	295 points in 10 days	(a) 100 pts. in 4 days. (b) 98 pts. in 4 days.
Date of appearance of first lesions.	About 27th July ($4\frac{1}{2}$ months latent)	About 30th May (2 months latent)	About 24th July (2 months latent)
Variety most seriously affected	Thompson & Washington Navel.	Thompson & Washington Navel.	Valencias but not severe.
Factor predisposing lesion development	Severe frosts 8th to 13th July.	Oleosell-osis abundant at end of May.	Severe frosts 28th June to 3rd July.

On unsprayed Valencias in the 1951 season infection was sufficient to show that Bordeaux mixture $2\frac{1}{2}$-$2\frac{1}{2}$-100 plus half a gallon of white oil applied in mid-February offered protection of the fruit even when the infection period occurred three months later.

In another experiment in which the District Entomologist co-operated, it was shown that a Zinc Bordeaux could be applied before fumigation with HCN for scale control. This spray was also residual for three months.

Observations made in the 1951 season suggest that instead of there being a varietal susceptibility among citrus, rind maturity in relation to time of infection determines the incidence of septoria in different varieties.

Department of Agriculture,
Leeton, N.S.W.

- J.R. MORSCHEL

HORMONE WEEDICIDE INJURY TO GRAPE VINES:

Hormone-weedicide injury has previously been reported in the A.P.D.R. on a number of plants including tomato, cauliflower and wheat. (Vide: 2:4:47 - 3:3:42 - 4:1:1).

During the present season damage to grape vines from hormone weedicides has been noted on two occasions. In late October 1951 currant and sultana specimens were received from a vineyard at Bindoon, Western Australia, showing virus-like symptoms somewhat resembling Roncet or Nettle Leaf, as described by Du Plessis (Ann. Stellenbosch Univ. Vol.XXVI. Section A. No.13, 1950). It was learned that Weedone, a 2,4-D preparation had been applied in the late dormant season for the control of double gee (*Emex australis*) growing between the rows, and no precautions had been taken to prevent the spray drift contacting the vines. Information regarding concentration used was not available. The main symptoms were as follows:- Reduction in leaf size with affected leaves fan shaped in outline - leaf margins irregularly and often deeply indented, and petiolar sinuses markedly widened - leaf veins cleared and presenting a prominent longitudinal pattern with the inter-veinal tissue puckered or "savoyed". In addition bud-burst had been delayed and, in some cases, arms of the vines had been killed outright.

The second case occurred recently when specimen sultana and white chasselas grapes were submitted from a West Swan vineyard, showing galls and cankers on the canes, gross thickening and cankering of fruit stalks, withering of berries, and Roncet-like leaf symptoms. Microscopic examination and isolations, revealed no evidence of a pathogen. It was subsequently learned that a 2,4,5-T weedicide had been sprayed on nearby morning glory (*Ipomoea* sp.) during the early growing season.

Most of the affected vines were located in a strip following a more or less N.W. direction from the place of application, a distribution which could reasonably be attributed to wind blown spray. In addition, however, odd vines throughout the vineyard were also affected. It was finally ascertained that the same spray outfit had been used for applying fruit fly bait to the vines probably without adequate cleansing and thus 2,4,5-T residue in the outfit could well be responsible for this damage. These examples further emphasise the need both for careful handling of hormone weedicides and also for more publicity to acquaint users of the dangers involved.

Department of Agriculture,
Perth.

- W. P. CASS SMITH

ORNAMENTALS.

FUSARIUM YELLOWS OF GLADIOLUS:

This disease has been found in several localities in N.S.W. during the past season and it is feared that it will not be possible to prevent its ultimate spread.

In a recent shipment from Holland 31 out of a total of 69 varieties were found to be affected.

There appears to be a grave danger that the disease could be carried by resistant varieties on which it could not be detected, and so introduced into yellows-free areas.

Department of Agriculture,
Sydney.

- LILIAN R. FRASER

GLOMERELLA CINGULATA ON GARDEN STOCKS:

A disease of garden stocks (*Matthiola incana*) caused by *Glomerella cingulata* is being investigated. The pathogen causes papery irregular lesions on leaves and stems of the host. Acervuli with black setae are produced on the diseased areas.

I would be pleased to hear of any occurrence of the disease in other parts of Australia and specimens would be appreciated.

Botany Department,
University of Queensland.

- DAPHNE J. MATTHEWS

PHYSODERMA ON AMARYLLIS:

In July 1951 plants of *Amaryllis belladonna* in a private garden at Somersby, N.S.W. were found to be affected by a leaf-spot condition. Oospores of a species of *Physoderma* were abundant in the lesions. The affected leaf areas were at first water soaked, becoming brown with age, and several inches long. Specimens were sent to the C.M.I. for examination. Miss Waterhouse, who examined them, considers that identification must await cross inoculation to *Allium* and *Muscari*. As far as I am aware no species of *Physoderma* has been recorded in Australia previously on any member of the Liliaceae or Amaryllidaceae. The above outbreak followed a period of prolonged and heavy rain.

Department of Agriculture,
Sydney.

- LILIAN R. FRASER

MISCELLANEOUS PLANTS.

SCLEROTIUM ROLFSII ON POLYPODIUM SCANDENS:

In March 1952 a potted fern, Polypodium scandens in the glasshouse at the Botany Department, University, Brisbane, was observed to be attacked by Sclerotium rolfsii. The leaves, when the disease was first noticed, were severely wilted and later the plant lost all of its leaves. A number of sclerotia were produced amongst the tangle of rhizomes covering the soil in the pot. As far as the writer is aware there is only one other record of this fungus on a fern, namely Pteris longifolia L. (Paintin, R.D., Mycologia 20:22-25, 1928).

Botany Department,
University of Queensland.

- J. GREEN

AN UNUSUAL OCCURRENCE OF SCLEROTIUM ROLFSII:

In April, 1951, a disease of Ottelia ovalifolia was observed. The host, an aquatic with floating leaves and aerial inflorescences, was growing in a chain of water holes at Seven Hills, Brisbane. The main symptom was rotting of the leaf blades, upper portions of petioles and parts of inflorescences at water level. On leaves, large holes with purplish brown edges appeared, with abundant hyphae fanning out from the margins. Numerous brown sclerotia, about 1 mm. diameter, occurred on rotting leaves and were also floating free on the water surface.

The causal organism appeared to be Sclerotium rolfsii. Cultures of it were compared with several isolates of S. rolfsii obtained from the Queensland Department of Agriculture and Stock and no morphological differences could be found. The isolates used for comparison were from the following hosts - apple, hoop pine seedlings, and carrot. The fungus from Ottelia, grown on onion-protease-peptone agar following Milthorpe's technique, produced the perfect state which agreed in all respects with the description of Corticium rolfsii.

The pathogenicity of the Ottelia isolate, and the other isolates obtained from the Department of Agriculture, was tested on a number of plants. Plants of Eichhornia speciosa and detached leaves of Ottelia and Limnanthemum indicum floated on water were exposed to infection by sclerotia. Ottelia was infected by all isolates, but no infection resulted with the other aquatic plants. The various isolates were also tested on seedling plants of beetroot and cabbage grown in sterilised soil in small pots. Pure cultures of the isolates were grown on sterilised wheat grains which were then introduced to the soil at the base of each plant. Results obtained are tabulated below -

Original Hosts of isolates	Beetroot		Cabbage	
	No. plants inoculated	No. plants infected	No. plants inoculated	No. plants infected
Ottelia	16	13	13	5
Apple	9	6	10	10
Hoop Pine	9	9	9	9
Carrot	9	3	11	6

No infection resulted on control plants.

Leaf attack by Sclerotium rolfsii is uncommon as the fungus is normally soil borne. In the case of Ottelia infection has taken place on all plant parts level with the water surface. It has been found that with one exception, sclerotia from all isolates examined would float on water. Bouyant sclerotia blow about on the surface of the water-holes and in this way come in contact with healthy plant parts.

S. rolfsii is a common cause of disease in Brisbane gardens during the warmer months. The valley in which the diseased plants were found drains an extensive residential area and it seems likely that sclerotia were washed down from home gardens.

Botany Department,
University of Queensland.

- J. GREEN

CHARCOAL ROT OF SORGHUM AND CROWN ROT OF JUTE AT ORD RIVER, W.A.

A crown rot of Hegari grain sorghum at the Kimberley Research Station, Ord River, Western Australia, has previously been recorded by Norris (A.P.D.R. 1:3:34,1949) and Fusarium moniliforme was isolated from a diseased sorghum plant on that occasion.

At about the same period (March, 1949) a grain sorghum specimen (var. Hegari) was received by this Department from the same Station. This specimen exhibited symptoms typical of charcoal rot, namely blackening of basal leaves and stem, shredding of affected stem tissues and rotting of roots. The shredded stem tissues were pink in appearance, being darker at the nodes and were studded with minute black sclerotia.

Charcoal rot is ascribed in the literature to the fungus Sclerotium bataticola and isolations from the sorghum specimen yielded this fungus in association with a Fusarium sp.

In March this year jute specimens (Corchorus capsularis) affected with a crown rot were received from the above Research Station. Minute black sclerotia were present on all the affected tissues of the stems, being found on the inner surface of the rotted bark and also on the surface of the pith. Isolations yielded a fungus very similar morphologically and culturally to the Sclerotium bataticola previously isolated from sorghum in 1949.

Department of Agriculture,
Perth.

- R. F. DOEPEL

DISEASE SURVEY IN PAPUA/NEW GUINEA:

During July/August, 1951, the writer visited the Territory of Papua/New Guinea to make a survey of diseases of bananas and other Musa spp. in connection with the possible establishment there of the manila hemp (abaca) industry, and in February, 1952 a survey was made of passionfruit diseases in the New Guinea Highlands.

No bunchy top (virus) of bananas was seen in any part of the Territory, but a plot of manila hemp (of Philippine origin) at Keravat was seen with symptoms which could only be accounted for by deciding it had a chronic form of bunchy top of the type studied in the Veimama banana. The plot was destroyed after seed was saved. Both the acute and chronic form of infectious chlorosis (cucumber mosaic virus) was seen in New Britain and at Madang, New Guinea. Leafspot (Cercospora musae) was present in all lowland areas but appeared to be controlled by low temperatures in the Western New Guinea Highlands (5,500 ft.). The variety of manila hemp grown at Keravat appeared to be highly resistant or immune to leaf spot. No sign of Panama disease was seen.

Mild to severe mosaic mottling of the foliage, sometimes accompanied by pronounced stunting was widespread in leguminous shade and cover crops in most parts of the Territory. One or several viruses might be involved. Mosaic symptoms were seen in Centrosema plumeri, Desmodium sp. Uraria lagopodioides, Tephrosia candida, Crotolaria anagyroides, C. striata and Dolichos hosei but not in Calopogonium sp., Indigofera sp. or Cajanas indicus. In some areas there was 100% infection of Crotalaria spp. but nearby peanuts (Arachis hypogaea) and beans (Phaseolus sp.) were unaffected. A single plant only of peanut was seen with mosaic symptoms. No sign of peanut rosette (virus) was seen.

The Territory appears also to have escaped mosaic disease of Cassava (tapioca) and all virus diseases of sweet potato (one of the most important native food crops).

An acute and chronic mosaic of taro (Colocasia antiquorum) is common in both New Guinea and New Britain, and in the Madang area a mosaic disease of yams (Dioscorea spp.) was seen. Tobacco mosaic is widespread in lowland areas on tobacco but is partially masked by low temperature in the Highlands. Mosaic diseases were seen also in Piper betle, Canna sp. (? cucumber mosaic virus) and Pandanus sp. (yellow spot mosaic) in New Britain.

Passionfruit crop is exceedingly well in the Highlands of New Guinea without any sign of woodiness disease. Brown spot (Alternaria passiflorae) however, is present and causes damage during the wet season. Passiflora edulis does not flower in the lowlands and seems to be free from diseases.

Citrus canker was seen at Lae on native lime (Citrus aurantifolia). A virus disease of lucerne was encountered at Goroka (5,500 ft.) which caused chlorosis, some mottling, stunting and proliferation of shoots. The foliage of papaws in the Highlands shows a brilliant mottle which is caused by powdery mildew.

Department of Agriculture,
Sydney.

- C. J. MAGEE

COMMONWEALTH MYCOLOGICAL INSTITUTE NOTES.

DIRECTORS REPORT FOR 1950-51.

A copy of this report is available in the 22nd Annual Report of the Executive Council of C.A.B. which has been published and is available in Australia. Good progress is reported in all sections of the Institute's work but some publications are being held over because of high printing costs.

It is pleasing to note that additional accommodation is now available to the Institute as a result of the occupation of the properties of Kew Green purchased in 1950. The Culture Collection has grown to 1,364 isolations and is making heavy demands on staff and finance. A grant of £500 was received from the Department of Scientific and Industrial Research and one of £300 from the Society of General Microbiology towards the cost of maintaining the collection. Many additional reprints, journals and books have been added to the Library and it is reported that the Institute would welcome greater use being made of its separate collection by plant pathologists and mycologists overseas.

NEW PUBLICATIONS:

Leaf Curl Disease of Cotton by S.A.J. Tarr, 1951.

Available C.A.B. Liaison Officer, C.S.I.R.O., Melbourne, 15/8d.

VISIT OF CHAIRMAN, C.A.B.

Mr. J.E. Cummins, M.Sc., F.R.I.C., Chairman of the C.A.B. Executive Council, paid a visit to Australia during February-March and attended the recent British Commonwealth Scientific Official Conference at Canberra and Melbourne. Mr. Cummins will stop off at Washington, D.C. on his return journey to endeavour to arouse greater interest in U.S.A. in the abstracting services of C.A.B.

- C.J. MAGEE.